Submersible agitator mixers

Submersible agitator mixers for wastewater

50 Hz

STUR PUMPS

Rev 1. 10/2020

Content

The technical information in the brochure is for reference only. Stur reserves the right to update and improve information without prior notice.

10.2020 / Revision 1

STUR
PUMPS

Submersible agitator mixers

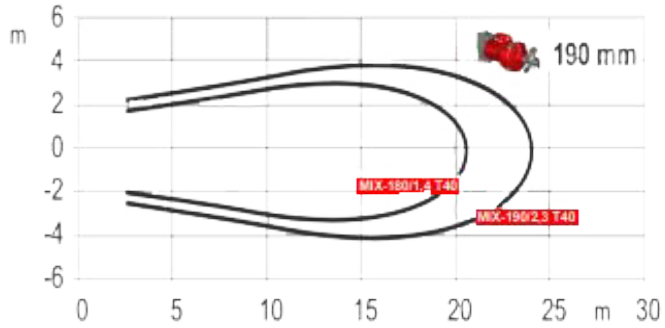
Agitator mixers are composed of a submersible motor attached to a propeller at its end. Their function is to create movement in a liquid lodged in a tank

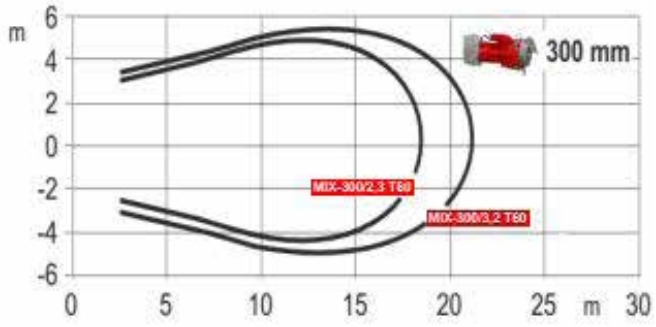
Their main purposes are: Obtaining a mixture or homogenization to maintain the solids in suspension and avoiding sedimentation, favoring dispersion, avoiding preferential currents, eliminating the formation of scabs or foams, etc.

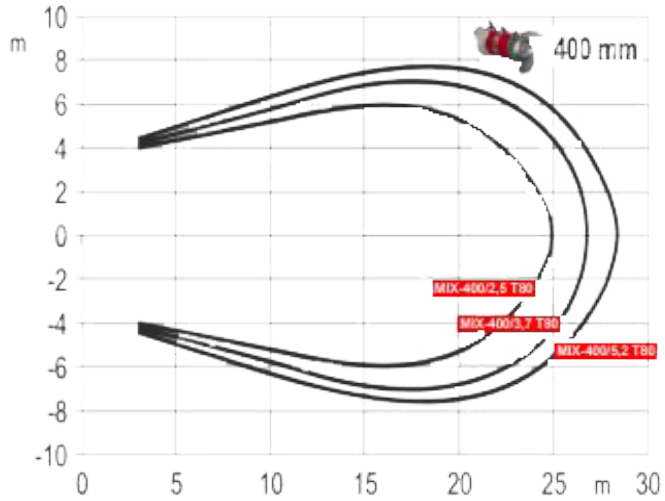
Applications

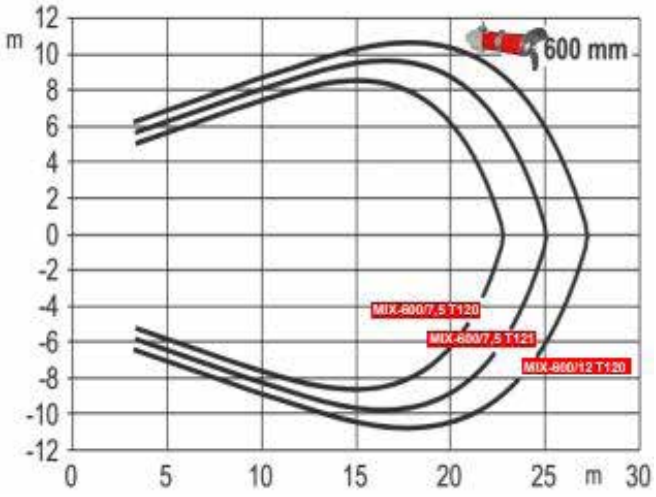
- Conventional activated sludge process.
- Sequential Reactors (SBR).
- Biomembrane Reactors (MBR).
- Pumping wells.
- Homogenizing tanks.
- Support for radial or jet aeration systems.
- Aerobic digestion
- Slurry homogenization.
- Pisciculture.
- Cooling tanks.
- Foam reduction.
- Storm tanks.
- Leachate treatments

Work range









Premium Efficiency IE3

All the pump motors are of the IE3 energy efficiency class, and have been configured to operate at variable speed by means of an inverter. This feature allows you to better manage performance while minimizing operating costs.

Energy savings and emissions reduction can only be achieved by operating the pumps at the maximum efficiency as long as possible, and always meeting the needs of the service point.

Efficiency	IEC standard	NEMA standard
↑ High	**IE3 Premium Efficiency**	**NEMA Premium EISA (IE3)**
	IE2 High Efficiency	**EP Act (IE2)**
↓ Low	**IE1 Standard Efficiency**	\

Components

Motor

- Asynchronous three-phase squirrel cage rotor type
- Power from 0.6 kW to 9.8 kW, for 4, 6, 8.10 and 12 poles at 50 Hz.
- Energy rating IE3
- Insulation class H (180° C)
- Service class S1
- Cooled by the surrounding liquid
- Protection rate IP68.
- ATEX regulations for 2 kW, 2.3 kW and 3.2 kW motors.

Propeller

Fused in stainless steel microfusion AS IS 316 L, it can also be supplied in Duplex or Super Duplex.

Shaft

Dynamically balanced, oversized, and mechanized to house bearings and mechanical seals.

Bearings

Ball radial type C3, lubricated for life without maintenance and oversized.

Oil chamber

The oil lubricates and cools the seals, and emulsifies any water inflirtations.

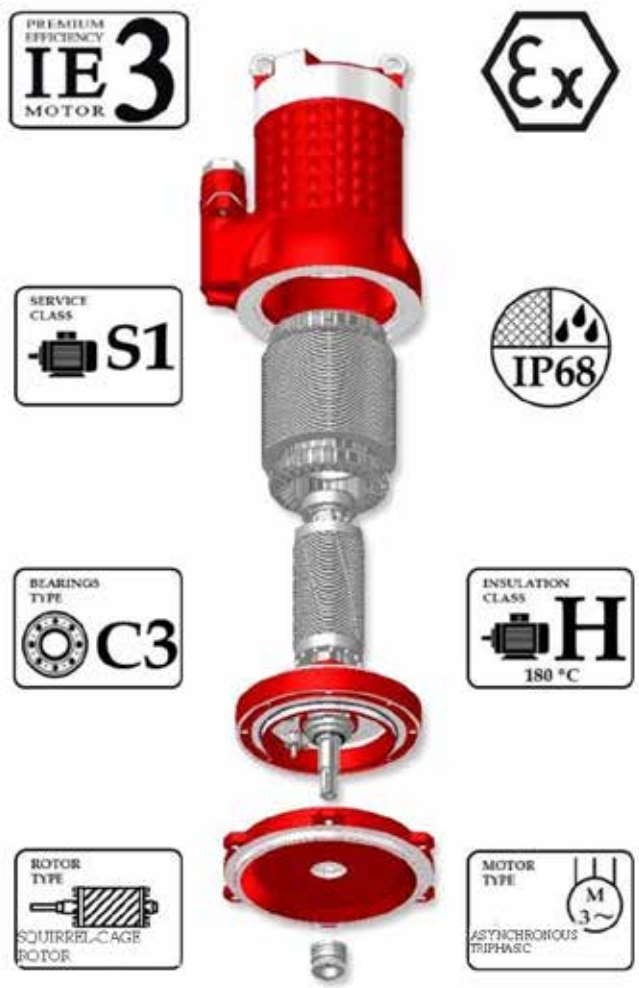
Mechanical seals

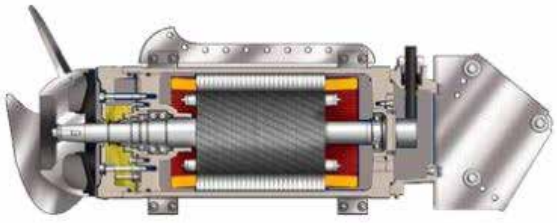
The pumps are equipped with two sealing systems for a perfect insulation between the electric motor and the pumped liquid:

- **Superior seal:** Ceramic / Graphite
- **Lower seal:** silicon carbide / silicon carbide

Materials

Cast iron EN-GJL-250.
Inox. AISI 316
Duplex.
Super Duplex.





Series

Submersible agitator mixers are divided according to the rotation speed of their propeller:

High-speed agitator mixers

To this group belong submerged agitator mixers with electric motors directly coupled to a propeller.

As an option, the high-speed agitator mixers can be equipped with a current ring installed around the propeller. Its function is to direct and concentrate the jet generated towards a specific point in the tank.

	MATERIALS			
Type	**Propeller**	**Body**	**Current ring**	**Flange**
FM	AISI 316	Cast iron	-	AISI 316
FMC	AISI 316	Cast iron	AISI 304	AISI 316
XM	AISI 316	AISI 316	-	AISI 316
XMC	AISI 316	AISI 316	AISI 316	AISI 316
DM	Duplex	Duplex	-	Duplex
DMC	Duplex	Duplex	AISI 316	Duplex
SDM	Super Duplex	Super Duplex	-	Super Duplex
SDMC	Super Duplex	Super Duplex	AISI 316	Super Duplex

Propeller Ø (mm)	Number of propeller blades	Propeller Ø (mm)	Number of propeller blades
176	2	300	3
191	3	370	3
197	3	400	3
300	2	600	3

High-speed agitator mixers

To this group belong submerged agitator mixers with electric motors directly coupled to a propeller.

As an option, the high-speed agitator mixers can be equipped with a current ring installed around the propeller. Its function is to direct and concentrate the jet generated towards a specific point in the tank.

	MATERIALS			
Type	**Propeller**	**Body**	**Current ring**	**Flange**
FR	Polyurethane[1]	Cast iron	-	Cast iron

1. The standard material of the polyurethane propeller, optionally can also be Inox AISI 316 L.

FERRO MIX

High-speed

Type	Code	Tension 50 Hz	RP.M	Ø Propeller (mm.)	Pot Abs. (KW)	Push (N)	Weight (kg)	
FERRO MIX FM-170/0,7 T40	6001408	3ph 400V	1352	176	0.6	120	20	
FERRO MIX FM-180/1,4 T41	6001431	3ph 400V	1382	191	1.2	220	30	
FERRO MIX FM-180/1.4 T40	6001412	3ph 400V	1382	191	1.2	220	30	
FERRO MIX FM-370/2 T80	6009050	3ph 400/690V	696	370	1.6	385	58	
FERRO MIX FM-190/2,3 T40	6007801	3ph 400V	1382	197	1.7	275	40	
FERRO MIX FM-300/2,3 T60	6001521	3ph 400V	931	300	2.0	300	44	
FERRO MIX FM-400/2,5 T80	6001519	3ph 400/690V	696	400	2.2	420	114	
FERRO MIX FM-300/3,2 T60	6001522	3ph 400/690V	931	300	2.5	320	57	
FERRO MIX FM-400/3,7 T80	6002688	3ph 400/690V	701	400	3.3	650	114	
FERRO MIX FM-400/5,2 T80	6008654	3ph 400/690V	706	400	4.3	780	125	
FERRO MIX FM-600/7,5 T120	6002689	3ph 400/690V	461	600	5.1	1040	240	
FERRO MIX FM-600/7,5 T121	6002594	3ph 400/690V	461	600	7.0	1500	240	

Series

Type	Code	Tension 50 Hz	RP.M	∅ Propeller (mm.)	Pot Abs. (KW)	Push (N)	Weight (kg)	
INOX MIX XM-170/0,7 T40	6001402	3ph 400V	1382	176	0.6	120	20	
INOX MIX XM-180/1,4 T40	6001980	3ph 400V	1382	191	1.2	220	30	
INOX MIX XM-370/2 T80	6001202	3ph 400/690V	696	370	1.6	385	68	
INOX MIX XM-190/2,3 T40	6007802	3ph 400V	1382	197	1.7	275	46	
INOX MIX XM-300/2,3 T60	6006388	3ph 400V	931	300	2.0	300	58	
INOX MIX XM-400/2,5 T80	6007884	3ph 400/690V	696	400	2.2	420	114	
INOX MIX XM-300/3,2 T60	6006584	3ph 400/690V	931	300	2.5	320	66	
INOX MIX XM-400/3,7 T80	6001520	3ph 400/690V	701	400	3.3	660	114	
INOX MIX XM-400/5,2 T80	6006649	3ph 400/690V	706	400	4.3	780	126	
INOX MIX XM-600/7,5 T120	6001478	3ph 400/690V	461	600	5.1	1040	245	
INOX MIX XM-600/7,5 T121	6001480	3ph 400/690V	461	600	7.0	1500	245	
INOX MIX XM-600/12 T120	6001518	3ph 400/690V	475	600	9.7	1850	245	

Type	Code	Tension 50 Hz	RP.M	∅ Propeller (mm.)	Pot Abs. (KW)	Push (N)	Weight (kg)	
BOOSTER XR - 900/3 T40	6003628	3ph 400V	1401	900	2.9	950	145	
BOOSTER FR - 1200/3,5 T40	6001805	3ph 400/690V	1392	1.200	2.7	1350	115	

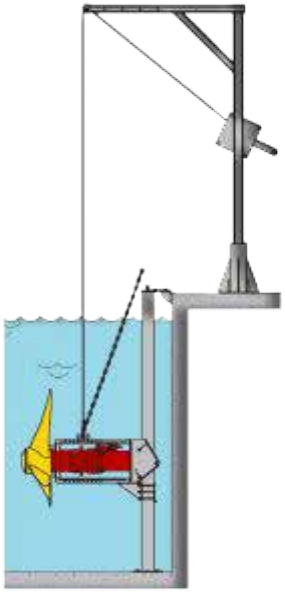
Guide rail installation and lifting system

This type of installation is generally used for liquid agitation in tanks higher than 2 meters in height. The agitator can be oriented almost 80° horizontally and 40° vertically. The working height can also be selected, as long as the specified submergence is respected.

The system allows fast and frequent inspection operations, even if the tank is full of water.

Applications.

- Active sludge tanks.
- Deep pumping wells.
- Homogenizing tanks.
- Support for radial and jet aeration systems.
- Support for aeration systems with diffusers.



Components.

A. Lifting system installed outside the tank.

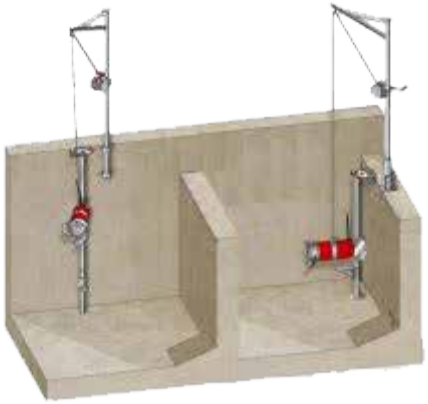
- Support and turning base.
- Base anchorage spirals.
- Lifting or lowering winch.
- Steel cable.
- Metallic structure.

It can be supplied in galvanized steel, stainless steel AISI 304 or stainless steel AISI 316L.

B. Guide tube installed inside the tank.

- Guide tube.
- Anchorage support to the tank wall.
- Spirals for anchoring to the wall.
- Support base and turn to the bottom of the tank.
- Base anchorage spirals.
- Depth stop.
- Screws.
- Metallic structure.

Can be supplied in galvanized steel, AISI stainless steel 304 or Inox AISI 316L.



Other types of installations

They are applicable exclusively to agitator mixers with a propeller diameter of 170mm to 190mm.

The agitator mixer can be oriented vertically up to 40º, by means of a device, which is included in the supply of the agitator mixers.

Applications.

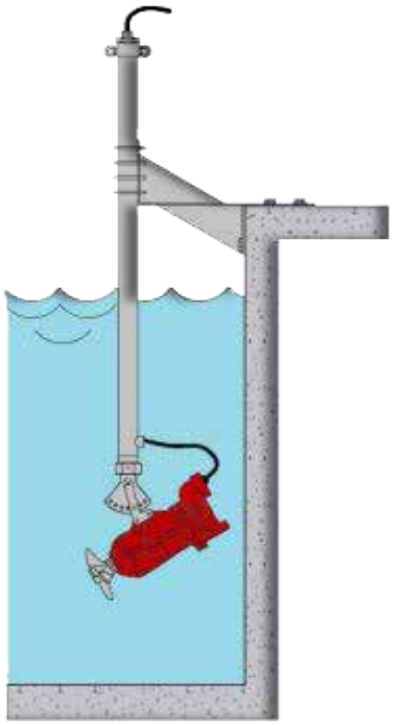
- Compact activated sludge plants.
- Pumping wells.
- Homogenizing tanks

Installation anchored to the wall with fixed support

Their use is common in the agitation of tanks or pumping wells between 2 and 3 metres in height.

Components.

- Screws, anchorage spirals and swims.
- 2" guide tube.
- Anchorage support to the tank wall.



Installation anchored to the wall with fixed support

Installation anchored to the bottom of the tank

Its use is limited to wells or tanks where no mechanical support can be installed on the walls. The agitator mixer is installed threaded on a plate at the bottom of the tank.

Components.

- Anchoring screws and spirals.
- Support plate

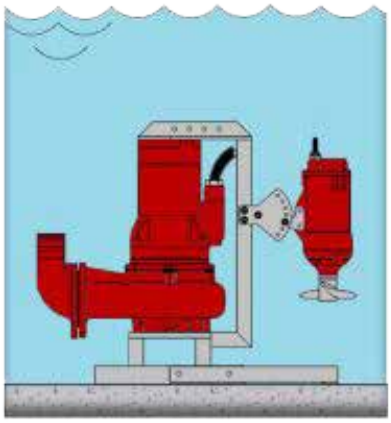
Installation anchored to the bottom of the tank

Installation on a submersible pump

It is used for agitation where the two previous installations are not active.

This circumstance is the most common in processes such as:

- Adaptation or modernization of existing pumping wells with decanting problems.
- Dredging or emptying of wells or tanks with medium or high content of decanted solids.



Installation on a submersible pump

stursubmersibles@sturpumps.com
www.sturpumps.com

STUR PUMPS